

central upon the plates. The photographs show, however, the inner corona and some details and extensions mainly on the north-eastern and south-western edges, reaching out in places to a distance of more than half the sun's apparent diameter. The size of the photographic image of the sun's disc upon the plates is nearly one and one-fifth inch. No member of the shore party, or of the party aboard the *Annapolis*, reported having seen these coronal extensions, or any stars, which fact is probably due to the comparative brightness during totality, writing being easily legible. The times of the four contacts were observed by the shore party, as well as aboard; the observed duration of totality was 2m. 1s.

The magnetic observations cannot be discussed until those made at other stations within and without the eclipse track are available for comparison.

**THE LIGHT OF ALGOL'S COMPANION.**—In a previous paper Mr. Joel Stebbins arrived at the conclusion, from his selenium photometer observations, that the companion of Algol is brighter on one side than the other, the difference being caused by reflection and by the heating effect of the primary on the one side, chiefly the latter. His argument for the untenability of the reflection theory having been questioned, he returns to the subject in No. 5, vol. xxxiii. of the *Astrophysical Journal*, and shows by a different method that only a small portion of the extra light can be due to reflection. Our knowledge of the radiations emitted by the satellite is insufficient to determine the question definitely, but it is evident that radiation, and not reflection, is the chief cause of the extra brightness of the one side.

**OBSERVATIONS OF MIRA.**—The maximum of Mira which took place in July, 1910, was observed at the Catania and Utrecht observatories, and the results appear in No. 4506 of the *Astronomische Nachrichten*.

Dr. Bemporad finds that the maximum, mag. 3.3, took place on July 21, 1910, and the neighbouring minima on March 25, 1910, and February 17, 1911, respectively: for the maximum, this was fourteen days earlier than predicted by Guthnick's ephemeris. The mean period would appear to be about 318 days, and the range of magnitude nearly 7.

Prof. Nijland's observations give a maximum, of mag. 3.2, on July 20, 1910, and a tabulated comparison of observed dates, with predicted dates for the last seven maxima, shows a period ranging from 342 to 310 days.

**MICROMETER MEASURES OF JUPITER.**—Dr. Lau continues his series of papers on Jupiter in No. 4509 of the *Astronomische Nachrichten*, where he records the micrometer measures, made during the opposition of 1910, of many different features. A number of minor changes from the previous oppositions were noted, the matt-white egg-shaped mass which was so marked a feature of the 1905 opposition being totally invisible. The geometrical network joining bands iii. and iv. was frequently seen and its points measured. Sketches of the Red Spot region show that while on April 10, 1910, the spot was of the usual pointed-egg shape, on May 4 its western extremity had become rectangular, and on May 10 dark masses of matter at the middle of both sides gave it an egg-boiler form.

**PHOTOGRAPHS OF THE AURORA BOREALIS.**—Prof. Carl Störmer, of Christiania, sends us abstracts from the *Comptes rendus*, in which he describes his method of taking simultaneous photographs of the aurora for the purpose of determining its altitude, and gives the results so far obtained. The photographs accompanying the paper of May 1 are very striking, and were taken in northern Norway during February and March, 1910, while from the diagrammatic summary of the results it is seen that the greatest proportion of auroræ measured were at altitudes ranging from 100–150 kms.

**THE EPHEMERIS FOR HALLEY'S COMET.**—Preliminary measures of plates showing Halley's comet, taken with the Crossley reflector during the period March 27 to May 27, are published by Dr. H. D. Curtis in No. 4506 of the *Astronomische Nachrichten*. A comparison with Dr. Ebell's ephemerides shows that the necessary corrections to the latter are of the order of only +12s. and -0.2' to -0.9'.

**THE DIFFERENTIAL QUALITY OF THE MOON'S REFLECTED LIGHT.**—No. 4510 of the *Astronomische Nachrichten* is accompanied by a splendid two-colour photographic repro-

duction of the full moon, showing the different quality of the light reflected by different regions of the lunar surface. The reproduction is from negatives obtained by Dr. Miethé and Herr Seegert, whose work and results have already been described in these columns.

**SUTTON DOUBLE STAR OBSERVATIONS.**—Dr. Doberck continues his record of double star observations made at Sutton in No. 4507 of the *Astronomische Nachrichten*. These particular observations were made during 1910–11, and deal with more than 100 doubles, including  $\alpha$  Geminorum and  $\alpha$  Leonis.

**THE CANYON DIABLO, OR COON BUTTE, METEORITES.**—An interesting paper by Mr. C. R. Keyes, dealing with the multitude of meteorites in the Painted Desert, Arizona, appears in No. 9, vol. xix., of the Transactions of the Academy of Science of St. Louis. After discussing the volcanic nature and the general geology of the surrounding land, the author arrives at the conclusion that Coon Butte, a conspicuous mound, was not formed by any abnormal meteoric fall, as has been frequently suggested, but is probably of volcanic origin. That such immense numbers of meteoric stones ("heavy stones" or "green stones") have been secured in the immediate neighbourhood he explains by the extraordinary dryness of the atmosphere preventing weathering, and the assiduity with which the objects have been sought; in fact, he suggests that any desert district enjoying similar climatic conditions would probably prove as fruitful in these objects as has the Painted Desert.

## UNIVERSITY DEVELOPMENT IN WALES.

### OPENING OF NEW BUILDINGS BY THE KING AND QUEEN.

THE visit of the King and Queen to North Wales in connection with the historical ceremony of investiture of the Prince of Wales at Carnarvon has been happily associated with two events of international as well as national interest: the opening of the new buildings of the University College of North Wales at Bangor by the King, and the laying of two foundation stones of the National Library of Wales at Aberystwyth by King George and Queen Mary.

The development of the university movement in Wales will probably stand out as a unique feature in contemporary history, owing to the large extent to which its success depends on popular enthusiasm and support. It owes its inauguration to the foundation, in 1872, of the institution in Aberystwyth, which still bears the name, "University College of Wales." When the establishment of colleges for North and South Wales was decided on as a result of the deliberations of the Government Committee appointed in 1880, the appeal for funds met with an enthusiastic response, not only from the wealthier, but also from the poorest classes of the community, the miners and quarrymen at Bethesda contributing their shillings, and even the children in the board schools contributing their pence. The question of permanent buildings was, however, deferred until the movement had time to mature, with the result that the work of the University College at Bangor has up till this year been carried on entirely in the buildings of the old Penrhyn Arms Hotel, while until recently the college at Cardiff was wholly located in what had previously been an infirmary.

It was only four years ago that King Edward laid the foundation stone of the buildings which were opened by his son last Friday, and in the interval there has been raised in Upper Bangor a fine college, the architectural features of which will compare favourably with those of the more ancient foundations of Oxford and Cambridge. As will be seen from the illustrations, the college stands on a hill overlooking the old town of Bangor, in a park the slopes of which are in the spring covered with bluebells. It is quadrangular in form, the class-rooms being on the first and second floors facing the park, while the other sides of the quadrangle are occupied by administrative buildings, examination rooms, and studies, and the Prichard Jones hall. On the left of the tower are seen the museum and library, which, when the scheme is completed, will form the side of a great outer quadrangle, the remaining sides being allocated to the science departments. The work of these is, however, for the present, being con-

tinued in the old college. The new building, in which the arts departments are located, thus forms the first step in a larger scheme, for the completion of which further funds will have to be raised. It has been built at a cost of 130,000*l.*, and was opened by the King nearly, if not quite, free of debt.

The largest individual contribution has been the *Aula magna*, given by Sir John Prichard Jones, whose name it bears, built at a cost of 15,000*l.* The library, given by the Drapers' Company at a similar cost, is an excellently equipped building, which, though so new, reminds one of the college libraries at Cambridge. In addition to this gift, the Drapers' Company has further maintained for many years a department of electrical engineering in conjunction with the department of physics. But in passing between these buildings we notice a stained glass window bearing the inscription, "Presented by the Postmaster and Staff of the Bangor Post Office." As another example of the varied character of the contributors, we note the recent donation of 100*l.* to the building fund by a member of the teaching staff of the Girls' County School. The site of the college, valued at 15,000*l.*, was given by the "Mayor, Aldermen, and Citizens of Bangor," and this gift was followed by a further contribution of several thousands to the building fund from the same source.

A special feature of the new college is the open cloisters

advised them to be as magnificent in their ideas as the architect has been in the edifice. There are those who attach supreme value to the training of the youth and the utilisation of opportunities otherwise unused, of talents that would otherwise fall out. We should not narrow our ideals to training intelligent youths to pass difficult examinations. Apart from examinations, youths educate each other often most effectually, and each one who looks back on what he gained at the university finds that it does not always consist only in the advantage derived from lectures. There is another function that every university should aim at. In dealing with knowledge, art, and literature they should be the custodians of all that is highest, and not the less so because we are living in a democratic age. Wales and its colleges feel this ideal as much as any community. Wales has had its share of those divisions of opinion that are the effects and causes of national vigour, but in university education Wales is a land of brothers. All classes are animated by the same ideals, and make the same sacrifices in the great cause. But this brotherhood goes far beyond the limits of nationality. This place is not merely a Welsh seat of learning, for learning knows no limitations; it will take its place in the wider brotherhood which extends throughout the civilised world. There are many occasions on which national differences may arise, but the function of a university is to make the country a community of

nations, one army conquering the same enemy, one band of workers united in a common cause.

The National Library of Wales, the foundation stones of which were laid at Aberystwyth the following day, owes its origin to the same movement. It was founded by Royal Charter in March, 1907, and its objects embrace "the collection, preservation, and maintenance of every form of literary and artistic production, whether printed or manuscript, relating to Wales and to the Celtic peoples and languages, as well as all literary works, whether connected or not with Welsh subjects, composed, written, or printed in whatsoever language,

on whatsoever subject, and wheresoever published, which may help to attain the purposes for which the University of Wales, the university colleges, and other educational institutions were created and founded, especially the furtherance of higher education and of literary and scientific research." The foundation of this library is largely the result of the efforts of Sir John Williams, Bart., who for more than thirty years has been purchasing books, which he has presented to the library. These have been temporarily housed in the Aberystwyth Assembly Rooms.

The site of the permanent buildings, situated on a hill overlooking the town, has been presented by Lord Rendle. The Exchequer grants which the library has received up to the present have been proportionally far below those made to similar institutions in Scotland and Ireland. The new library will, it is hoped, receive some of the privileges enjoyed by the libraries of Oxford and Cambridge with regard to the acquisition of copyright books. It is, however, clearly understood that a condition of such a concession is the maintenance of the international character of the library, and of the provision contemplated in the charter

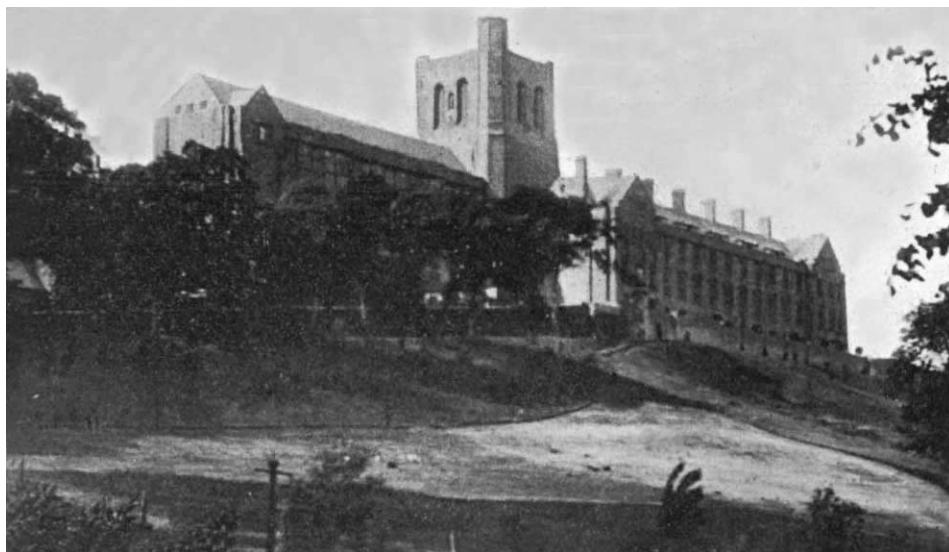


FIG. 1.—Front view of the new buildings of the University College of North Wales, Bangor. To the left of the tower are the museum (lower floor) and library (upper floor). Right of the tower are students' common rooms (ground floor) opening on terrace, lecture room (first and second floors) and Professors' rooms (in the attics).

outside the lecture rooms, as shown in our second illustration, thus ensuring efficient ventilation.

The opening ceremony was performed in the presence of a large and representative gathering. We had Mr. Balfour and Mr. Lloyd George, not only sitting together on the same side of the house, but sharing a programme; Lord Hugh Cecil, the master of the Drapers' Company, and other distinguished guests. At the preliminary banquet, Mr. Balfour, in his speech, expressed the opinion that those who have planned and carried out this work have proceeded on right lines. They have not been modest in their ambitions, and they have been right. The building was planned on a scale that is not only adequate, but has the germs of development, which will render it adequate to future strains. Much of the advantage of a university education lies in the memories of those who have enjoyed it. When great architecture is linked with beautiful surroundings, subtle impressions are formed which move men until their dying day. It is well worth while to have great ideals as to the work. This breadth of view as to the ideals of education and culture is animating all those who preside over and control the courses of study, and Mr. Balfour



as a safeguard against its becoming a purely Welsh institution. In these circumstances we confidently hope that scientific literature of all nations will be adequately represented. At the same time, it is important for English workers to realise the scientific importance of much that comes under the more Welsh side of the library. At present numbers of manuscripts and documents, full of historic interest, are scattered about in remote districts, and the foundation of a central collection cannot fail to bring to light important new contributions to our knowledge of history and anthropology. A further step in the same direction is the National Museum at Cardiff, of which the foundation stone will be laid next year, and which will, it is hoped, serve to preserve records of the druidical and other remains which are gradually disappearing under the devastating influence of utilitarianism. The astronomical interest connected with these remains will be well known to readers of *NATURE*. A photographic survey of the antiquities of Wales might, one would think, be inaugurated with

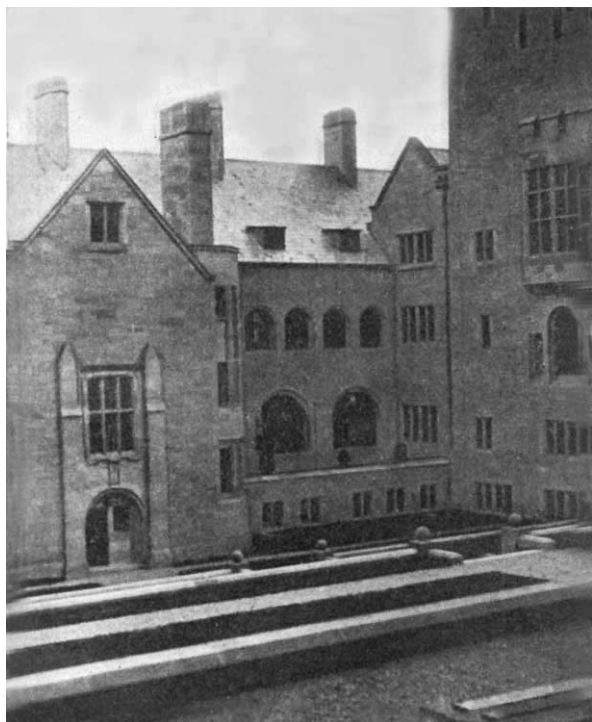


FIG. 2.—Interior of the quadrangle, showing the open cloisters by which the lecture rooms are approached. On the left-hand side is the block containing the Assistant Lecturers' private rooms; on the right a corner of the tower.

advantage in connection with either the library or the museum, perhaps both.

The proceedings in Aberystwyth were attended by delegates from most of the universities of the United Kingdom, as well as the Royal Society and similar bodies, and these received hospitality at the Alexandra Hall (the residence of the women students), which thus became the scene of pleasant meetings between the brotherhood of university workers so well described by Mr. Balfour. The memories which we shall carry away of this gathering will be ranked in the same group with our pleasantest reminiscences of British Association meetings. We could have wished that royal honours had been conferred on some representative of science, as it is probable that such a distinction would have given an impetus to an aspect of the university movement which must always be kept prominently in the foreground.

G. H. BRYAN.

## TECHNICAL TRAINING AND UNIVERSITY GRANTS.

IN the House of Commons on July 13, in Committee of Supply, the President of the Board of Education made his annual statement reviewing the work of the Board during the previous year.

Dealing with the museum work of the Board of Education, Mr. Runciman referred to the controversy over the question of a site for the Science Museum. He said:—"Since the first announcement was made about the site of the Science Museum I have entered into negotiations with the Trustees of the British Museum, and we have now arrived at an agreement which will give us the land we require for the Science Museum and will not interfere with the development of the Natural History Museum, so that we shall have in South Kensington a group of museums which will be the envy of foreign nations."

In the course of his further remarks, Mr. Runciman referred to technical training and university grants. Subjoined are a few extracts from *The Times* report of his speech.

### HIGHER TECHNICAL TRAINING.

"I regret to say that from all I learn of the work done in the provinces and of the work done on the Continent, I have to confess that it is in the field of higher technological forces that we have most leeway to make up.

"It is true that in many directions large sums of money are being devoted to the endowment of technological chairs in almost every modern university. Great bequests have been made during the past year. The University of Liverpool has recently founded a professorship of naval architecture, largely owing to the generosity of Mr. Elder. They have also created a department for the study of the problems of town planning—a new and rather interesting department. There are at the present time at least two departments in modern universities for the study of aeronautics. A professorship has been founded at Leeds for the study of the gas, coal, and fuel industries. In the same university instruction is being provided in wool-combing and spinning, for which the Clothworkers' Company has given a sum of no less than 50,000*l.*, making, I believe, the school at Leeds one of the most valuable technical schools in Europe. In the north of England a sum of 35,000*l.* has been applied for the teaching of mechanical engineering, and in three universities sums of 30,000*l.*, 50,000*l.*, and 70,000*l.* respectively have been provided for the promotion of chemical science.

"In London 60,000*l.* has been set apart by the University Association for the training of women in the study of the science of the household. Great progress has been made, I am glad to think, in the departments of metallurgy and chemistry in the north. In the sciences at the Imperial College great improvements have been made in the last twelve months, and I believe now that the leaders of the great industries are well alive to the fact that in the development of higher technological work lies much of the hope for their future success. I need not mention agriculture except in passing. Two agricultural colleges have been linked up with modern universities.

"When one records all, there is still left the feeling that in England there is not full appreciation of higher technological work, and when we make comparison of the number of students at German and English universities it is all to the advantage of Germany and not to our credit. In the eleven modern universities of England at the present time full time students number 9600, and if you add 7000 at Oxford and Cambridge of under- and post-graduates, you have a total for England and Wales of 16,600 students. It sounds like a large number, but when you remember that Germany has 63,000 students in similar institutions we may well say we have a long journey before us."

### UNIVERSITY GRANTS.

"The most important departure made in the administrative work of modern universities is to be found in the change in distribution of the Treasury grant. Over a long period the Treasury grants given in large sums were spent at the discretion of the modern universities under the advice of a committee set up by the Treasury. There is